

2-7 Proving Segment Relationships

2-8 Proving Angle Relationships

DO NOT WRITE!

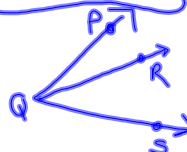
Postulate 2.8--Ruler Postulate--points on any line/segment, can be paired with any real number

Postulate 2.10--Protractor Postulate--An angle can be positioned so that one ray ends with 0 and the other is between 0 and 180.

Postulate 2.9--The Segment Addition Postulate--If B is between A and C, and A, B, and C are collinear, then $AB + BC = AC$



Postulate 2.11--The Angle Addition Postulate--If R is in the interior of $\angle PQS$, then $m\angle PQR + m\angle RQS = m\angle PQS$



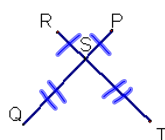
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Example 1

Given: $RS = PS$; $ST = SQ$

Prove: $RT = PQ$



Statements

Reasons

- | | |
|------------------------------------|-------------------------------|
| ① $RS = PS$; $ST = SQ$ | ① Given |
| ② $RS + ST = PS + SQ$ | ② Addition |
| ③ $RS + ST = RT$
$PS + SQ = PQ$ | ③ Segment Add. Post. (S.A.P.) |
| ④ $RT = PQ$ | ④ Substitution |

Example 2

Given: $LM = NO$

Prove: $\overline{LN} \cong \overline{MO}$



Statements

Reasons

- | | |
|---------------------------------------|--------------------------------------------|
| ① $LM = NO$ | ① Given |
| ② $MN = MN$ | ② Reflexive (when adding exact same thing) |
| ③ $LM + MN = MN + NO$ | ③ Addition |
| ④ $LM + MN = LN$
$MN + NO = MO$ | ④ Segment Add. Post. (S.A.P.) |
| ⑤ $LN = MO$ | ⑤ Subst. |
| ⑥ $\overline{LN} \cong \overline{MO}$ | ⑥ def. of \cong * |
- (Change from $=$ to \cong or vice versa)

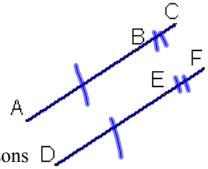
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DO:

Given: $AB = DE$; $BC = EF$

Prove: $AC = DF$



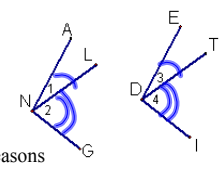
Statements	Reasons
① $AB = DE$ $BC = EF$	① Given
② $AB + BC = DE + EF$	② Add
③ $AB + BC = AC$ $DE + EF = DF$	③ Segm. Add Post
④ $AC = DF$	④ Subst.

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EXAMPLE 4:

Given: $m\angle 1 = m\angle 3$; $m\angle 2 = m\angle 4$

Prove: $m\angle ANG = m\angle EDI$



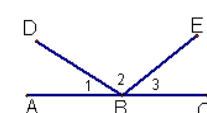
Statements	Reasons
① $m\angle 1 = m\angle 3$ $m\angle 2 = m\angle 4$	① Given
② $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	② Add
③ $m\angle 1 + m\angle 2 = m\angle ANG$ $m\angle 3 + m\angle 4 = m\angle EDI$	③ Angle Addition Post. (A.A.P.)
④ $m\angle ANG = m\angle EDI$	④ Subst.

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EXAMPLE 5:

Given: $m\angle 1 = m\angle 3$

Prove: $m\angle ABE = m\angle DBC$



Statements	Reasons

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